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Cetaceans and Noise in Hong Kong A Case Study

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Background image courtesy of Brian Yang

INTRODUCTION

The Hong Kong Special Administrative Region (SAR) is situated on the south coast of the Chinese province of Guangdong (22° 20'N 114° 10'E). There have been records of at least sixteen species of cetaceans from Hong Kong ^{1,2} with two species permanently residing in the SAR's territorial waters:

- the Indo-Pacific humpback dolphin (*Sousa chinensis*) and
- the finless porpoise (*Neophocaena phocaenoides*).

Both of these species have been highlighted by the World Conservation Union (IUCN) as being at risk, because their habitats are often degraded and disturbed by human activities ³⁻⁵.

Therefore every effort should be made to minimise disturbances to the habitats and natural behaviour of these populations.

However, Hong Kong is one of the busiest ports in the world, with approximately **half a million oceanic and river-going vessels** travel through Hong Kong's waters every year including over **10,000 transits by high speed ferries** through the area of greatest humpback dolphin abundance.

This shipping traffic will ultimately increase, as new regular shipping routes to Hong Kong from mainland China have been proposed.



Figure 1. A map of Hong Kong showing the Marine Park area and distribution of humpback dolphins.⁶

MARINE PARK & NOISE

In 1995 a Marine Park was established by the Hong Kong government around the islands of Sha Chau and Lung Kwu Chau, an area important for resident humpback dolphins, as a protective or 'sanctuary' area for these animals.

However, **over 200 vessels** can surround this 'sanctuary' area at any time, and the Urmston road shipping channel is located immediately to the north of the sanctuary. The Marine Park itself was a measure to mitigate, and compensate, for the construction of a temporary aviation fuel receiving facility off Sha Chau, the construction of which incorporated pile driving and additional boat traffic.

A bubble curtain was created to try to mitigate the noise produced by the pile driving⁷ – probably the first mitigation measure ever introduced to specifically protect dolphins from noise disturbance in Hong Kong, or indeed, in Asia.



Jack-Park humpback dolphin (S. Hung)

AIRPORT & NOISE

Adjacent to the Marine Park in the south is Chek Lap Kok airport, which when at full capacity will have over **700 planes** descending and taking off daily, directly over the sanctuary and other critical dolphin habitat.

The airport itself is constructed from an island which, prior to 1993, was an area frequently used by dolphins, prior to the infilling of the surrounding waters and the demolition of the island itself to produce the airport platform, all activities involving high noise input into cetacean habitat.

RESPONSES TO SHIPPING

As mentioned above, shipping traffic in Hong Kong is heavy. A recent study recorded behavioural changes of humpback dolphins in response to boat traffic :

- dolphin dive duration increased the closer the animals were to shipping traffic vessels⁸ &
- increased density of vessel traffic also was correlated with increased dive duration.⁸

The responses of the dolphins varied with types of vessels. For example, dolphins did not respond to cargo vessels, but actively avoided high-speed vessels (including high speed turbo ferries, catamarans and speed boats).⁸

DOLPHIN-WATCHING

In addition, there are increasing numbers of dolphin-watching vessels specifically targeting areas of high dolphin abundance. There are at least 30 commercial operators actively running dolphin-watching trips in Hong Kong, as well as many small boat owners on an *ad hoc* basis.⁹ In 2003 there were an estimated 1,200 visits to dolphins by these tours.⁹

Tour boats undertaking these trips usually travel less than 10 knots, but some high speed boats travel at up to 20-25 knots. To minimise the stress placed on observed dolphin groups several companies have, however, voluntarily adopted an operating code of conduct. But the majority of operators (>90%) were found to be unaware of this code.⁹

In addition, small motorized boats have also been reported chasing dolphins at high speed to the south of the Marine Park area, clear evidence of harassment and disturbance.

ADDITIONAL STRESS

Cetaceans in Hong Kong are exposed to high levels of anthropogenic contaminants,¹⁰⁻¹³ their food supply is depleted, and there is evidence of some anthropogenic mortality and injury through fisheries by-catch and boat collisions: six stranded finless porpoises and humpback dolphins have showed **injuries consistent with ship strikes**.¹⁴ Also, 3.4% of live animals display lacerations that are consistent with **propeller injuries**.⁶

Noise produced by a variety of anthropogenic sources in Hong Kong, including shipping, construction and aircraft, adds another, potentially major anthropogenic stressor to already impacted cetacean populations, and adds to the degradation of their habitat

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